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EXAMINER

ELALLAM, AHMED

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/019,702

Applicant(s)

BHATOOLAUL ET AL.

Examiner

AHMED ELALLAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-8, 10-12, 14, 16-19 is/are rejected.
- 7) ☒ Claim(s) 3, 6, 9 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This communication is responsive to Amendment filed on 01/20/2006. The Amendment has been entered.

Claims 1-3, 5-12, 14-19 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 3 and 12, 16-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 3 and 12, the specification does not adequately describe the manner of how "more than one common control channel carries pilot symbols, the pilot symbols from each of more than one common channel are combined with the first set of pilot symbols.

Regarding claim 16, the specification does not adequately describe the feature: "common control channel carrying static data symbols, the static data symbols being used as second set of pilot symbols"

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Regarding claim 18, the specification does not adequately describe the feature: "pilot symbols on at least one common control channel are static data symbols".

Claims 17 and 19 depend from rejected respective claim 16 and 18, thus they are subject to the same rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya et al, US 6,400,700 in view of Jalloul et al, US 6,192,040. Hereinafter referred to as Miya and Jalloul respectively.

Regarding claim 1, with reference figures 2 and 3, Miya discloses a method in which pilot symbols are provided comprising a first set of pilot symbols through a plurality of pilot channels (codes 2-codes m) (figure 2), each channel being dedicated to one mobile user, and simultaneously providing a second set of pilot symbols in a mobile through one common control channel (pilot channel 101, and code 1, figure 2) (claimed simultaneously providing a second set of pilot symbols through at least one common control channel). Miya further discloses pilot code 1 is detected and combined with the other received pilot symbols (see

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unit 307 and 313 of figure 3) at a mobile station to provide coherent detection, see figure 3 and 5, column 5, lines 46-67 and column 6, lines 1-11. In addition, Miya also discloses having other-cell signal level information carried in the pilot channel 101, see figure 3, column 6, lines 3-8, and lines 26-37. (Claimed common control channel also carrying data symbols in addition to the set of pilot symbols and combining the first and second sets of pilot symbols).

While Miya specify combining the received pilots for coherent detection of received signals, it doesn't specify using the combination for estimating the channel impulse response.

However, Jalloul discloses channel estimation (claimed channel impulse response) based on combining received plurality of pilot symbols of respective plurality of channels, see Abstract, and column 4 lines 1-17. It would have being obvious to a person of ordinary skill in the art, at the time the invention was made to combine the received symbols of Miya in a similar fashion as taught by Jalloul for the determination of the channel estimate (claimed channel impulse response) along the coherent detection so that accurate channel estimation can be made. The advantage would be the improvement in Miya's coherent detection given more accurate channel estimates.

Regarding claim 2, with reference to figure 2, code 1 pilot channel is a broadcast channel, because code 1 is commonly transmitted to each subscriber unit. (claimed common control channel is a broadcast channel).

Regarding claim 10, with reference figure 3, Miya discloses a mobile for use in a code division multiple access mobile radio telecommunications network

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comprising a dedicated pilot channel circuitry 311 to receive pilot symbols on a dedicated pilot channel (code 2, figure 2) (claimed first receiving means to receive pilot symbols on a dedicated pilot channel), communication channel circuitry 303 to receive pilot symbols on a common communication channel (channel having code1, figure 2), and other cell monitor cell circuit 309 for detecting the other-cell signal level information carried in the pilot channel 101, see figure 3, column 6, lines 3-8, and lines 26-37 (claimed second receiving means to receive pilot symbols on at least common control channel carrying pilot symbols embedded between data symbols), the mobile station having a correlation circuit 313 for combining the received pilot symbols (Examiner interpreted the correlation circuit 313 receiving the output from the unit 307 as being the claimed combining means for combining the received pilot symbols), detection circuit 314 for receiving the output of correlation circuit 313 and for making coherent detection, see column 5, lines 46-57 and column 6, lines 26-37 and column 6, lines 26-32. (Claimed providing an output to coherent detection means (by the estimation means)).

Miya doesn't explicitly disclose having channel estimation means connected to the combining means.

However, Jalloul discloses channel estimation filter (figure 4) (claimed channel estimation means) that is used provide a channel estimates for combined pilot symbols. See column 4 lines 1-17, and column 5, lines 12-18. It would have being obvious to a person of ordinary skill in the art, at the time the invention was made to provide the combining means of Miya with a form of

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estimation means as taught by Jalloul so that accurate channel estimation can be made along Miya's coherent detection. The advantage would be the improvement in Miya's coherent detection given more accurate channel estimates.

Regarding claim 11, Miya discloses a correlation circuit 305 and a correlation circuit 313 of the mobile station along with the detection circuit for providing a coherent detection, see column 6, lines 9-14. (Claimed set of rake fingers arranged to receive pilot symbols from the dedicated pilot channel and the at least one common channel).

3. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya in view of Jalali, US (6,154,659). Hereinafter referred to as Jalali.

Regarding claim 7, with reference figures 1, 2, 3 and 5, Miya discloses code division multiple access mobile radio telecommunications network comprising a plurality of mobile stations (figure 3 show only one mobile station for illustration purpose only), each mobile station have a dedicated pilot channel (channel 1, figure1), spread code and spread circuitry (110, 111,..) for supplying pilot symbols to the dedicated pilot channel (s), (claimed first pilot symbol generation means arranged to supply pilot symbols to the dedicated pilot channels), a pilot channel 101 circuitry for supplying a pilot code that is broadcast to all the mobile stations along with transmission data (1), having other-cell signal level information carried in the pilot channel 101, see figures 1, 3, column 6, lines 3-8, and lines 26-37 (claimed second pilot symbol generation means arranged to

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supply to at least one common control channel dedicated pilot symbols embedded between data symbols broadcast by the common control channel), Miya further discloses that the mobile station having a radio reception unit 302 for receiving the pilot symbols in the dedicated pilot channel and the common control channel (unit 303 and 311 of figure 3), in addition Miya discloses a correlation circuit 313 for combining the received pilot symbols (Examiner interpreted correlation circuit 313 receiving the output of the unit 307 of being the claimed combining means for combining the received pilot symbols), detection circuit for receiving the output of correlation circuit 313 and for making coherent detection, see column 6, lines 26-32. (Claimed channel estimation means to receive the combined pilot symbols and coherent detections means), the output of the coherent detection circuitry is output to the binary decision circuit that used in the determination of data reception, see column 5, lines 46-57 and column 6, lines 26-37. (Claimed coherent means arranged to vary at least one property of the mobile in accordance with the output of the channel estimation means).

As to claim 7, the difference between the teaching of Miya and claims 7 is that Miya doesn't disclose that the communication system comprise a plurality of base stations.

As to claim 8, the difference between the teaching of Miya and claims 8 is that Miya doesn't specify each mobile is arranged to send to an associated base station information relating to the quality of pilot symbols received on its dedicated pilot channel, and each base station is arranged to vary the energy of the pilot symbols accordingly.

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However, Jalali discloses transmitting power control command from a mobile to its associated base station instructing the base station to increase or decrease its transmit power of a predetermined amount based on estimated symbol-energy-to-noise-density (the symbol-energy-to-noise-density is equated with the claimed information relating to the quality of pilot symbols). See column 3, lines 15-33, and figure 5.

It would have being obvious to a person of ordinary skill in the art, at the time the invention was made to incorporate the power commands transmission by the mobile stations of Miya to the base stations using the teaching of Jalali to improve the quality of communications between the base stations and the mobiles units by recognizing the benefit of controlling the transmission power versus the available noise in a manner to increase the bandwidth capacity of each base station (Jalali, column 1, lines 49-57) by providing the right amount of transmission power that is required for each communication channel to keep the interference level low enough for each and every mobile unit in the mobile network of Miya.

4. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya in view of Jalloul as applied to respective claims 1 and 2 above, and further in view of Jalali.

Regarding claims 5 and 14, Miya in view of Jalali discloses all the limitations of claims 5 and 14 as discussed above with reference to claims 1 and 2, except they do not specify transmitting from a mobile to base station

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information relating to quality of received pilot symbols, the base station then varies the energy associated with the set of pilot symbols.

However, Jalali discloses transmitting power control command to the base station instructing the base station to increase or decrease its transmit power a predetermined amount based on estimated symbol-energy-to-noise-density.

See column 3, lines 15-33.

It would have being obvious to a person of ordinary skill in the art, at the time the invention was made to incorporate the power commands teaching of Jalali in the system of Miya in view of Jalloul so to improve the quality of communications between the base station and the mobiles units by recognizing the benefit of controlling the transmission power versus the available noise in a manner to increase the bandwidth capacity of the mobile system (Jalali, column 1, lines 49-57) by providing the right amount of transmission power that is required for each communication channel to keep the interference level low enough for each and every mobile unit in the mobile network.

Allowable Subject Matter

5. Claims 3, 6, 9 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed 01/20/2006 have been fully considered but they are not persuasive:

Applicants amendment to claims 6, 9, 11, and 15 and the cancellation of claims 4 and 13 overcame the rejections under 112 1st Paragraph.

Applicants' amendment to claims 3 and 12 overcame the rejections under 112 2nd Paragraph.

Applicants argue that the Amendment to claim 1 distinguishes over the teaching of Miya, US 6,400,700. In particular Applicants argue that Miya does not teach the common control channel also carries data symbols in addition to second set of pilot symbols, because only pilots symbols are carried by the common pilot channel. Examiner respectfully disagrees, the claimed data symbols being carried on the common control channel are interpreted based on the specification to mean "information about neighboring cells" as indicated on page 8, last paragraph, and that given Miya teaching of having other-cell signal level information carried in the pilot control channel 101 reads on this claimed data symbols. See figure 3, column 6, lines 3-8, and lines 26-37.

As to claim 10, similar remarks apply as indicated with regard to claim 1, since claim 10 has been amended in similar fashion.

As to claim 7, Applicants submitted that there is no discussion in Miya as to how pilot symbols might be combined with data symbols, citing an embodiment (embodiment one of Miya) in which transmission data (figure 1) is not information to be transmitted (column 6, lines 45-47). Examiner notes that

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Miya discloses a different embodiment (embodiment 3) in which the transmission data which is transmitted along the pilot symbols over a common control channel is information related to other-cell information. Thus contrary to applicants' assertion, Miya does teach pilot symbols are combined with pilot symbols carried on a common control channel.

As to dependent claims 5, 8, and 14, Applicants argue that these claims depend from allowable base claims 1, 7, thus they are allowable. Examiner respectfully disagrees; given the rejections above Examiner believes that a *prima facie* case of obviousness is properly established.

Examiner notes that newly added claims 16-19, have the same scope of claims 1, 7 and 10, added the limitation involving the "static" feature. Thus they are not deemed patentable over the prior art used in claims 1, 7 and 10 if the static data is meant to be pilot symbols as Applicant contend.

Examiner believes that given the claims the most reasonable interpretation, the rejection above is proper.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Leung, US 2002/0186677; and Park et al, US 6,766,146).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **AHMED ELALLAM** whose telephone number is (571) 272-3097. The examiner can normally be reached on 9-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou Hassan can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public

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PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AHMED ELALLAM
Examiner
Art Unit 2668
March 18, 2006



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